



Adelaide
South Australia

S p a t i a l D i v e r s i t y

Spatial Diversity

Registration Brochure

**Surveying & Spatial Sciences Institute
Biennial International
Conference 2009**

**28 September – 2 October 2009
Adelaide Convention Centre
Adelaide, Australia**

Important Dates

Early Bird Registration Deadline: 21 August 2009

Accommodation Booking Deadline: 21 August 2009



www.ssc2009.com



Invitation from the Convenor

Dear colleagues and friends

It is with great pleasure that I invite you to attend SSC2009: the Biennial International Conference of the Surveying and Spatial Sciences Institute (SSSI) to be held in Adelaide, South Australia, Australia from 28 September to 2 October 2009.

The Surveying and Spatial Sciences Institute was recently formed when members of the Spatial Sciences Institute and the Institution of Surveyors voted to merge. SSSI brings together the best of the two bodies, and strengthens the voice of spatial professionals in Australia and New Zealand. The SSC biennial conference, previously an event of the SSI, will continue with the new Institute, and we are confident that the inaugural SSSI conference in Adelaide will be the biggest and best yet.

The biennial conference is the premier event for surveying and spatial sciences in the Australasian region. It attracts a large and diverse audience and in 2009 will embrace a new format. The South Australian regional committee for the Surveying and Spatial Sciences Institute is very excited about the event, which will provide cutting edge developments in the application of spatial science to a diverse set of disciplines, communities and people: indeed this diversity is the inspiration for the conference theme of Spatial Diversity.

The conference theme will be delivered to you via plenary and keynote presentations, technical papers, symposia, workshops, competitions, awards, dinners, lunches, coffee, exhibitions, breakfasts, walks and talks. We are attracting key players in the industries where spatial information is so important – environment, mining, defence, land administration, agriculture, disaster management and more. Together with these people we are engaging a large range of exhibitors of technology and applications. This will all be delivered to you in one of the world's best convention centres, right in the heart of a very friendly city.

In addition to the many attractions that the city of Adelaide has to offer, Adelaide is also the gateway to a range of regional touring experiences. From here you can visit our renowned wineries, take in the wonders of our natural habitats in places like Kangaroo Island, the Flinders Ranges, or the Great Australian Bight where the fishing and whale watching are second to none.

I sincerely trust that you will join us at SSC2009 and that you plan now for Adelaide, South Australia, 28 September – 2 October, 2009.

Associate Professor David Bruce
SSC2009 Convenor

Organising Committee

David Bruce (Convenor)	Jason Dreimanis
Penny Baldock	Gary Maguire
Mike Burdett	Bertram Ostendorf
James Cameron	Richard Retallack
Paul Corcoran	Dimity Watson
James Curnow	





Keynote Speakers



Prof. Kristen Kurland

Carnegie Mellon University, Pittsburgh

Kristen Kurland holds a joint faculty appointment between Carnegie Mellon University's H. John Heinz III College and School of Architecture. In addition to her full time position at CMU, she is the president of a local consulting firm that has implemented

computer technology programs in numerous organizations since 1989. Her clients include architects, engineers, hospitals, universities, corporations, as well as local, state, and federal governments.

Kurland's research focuses on interdisciplinary collaborations in health, the built environment, and spatial analysis using geographic information systems (GIS.) She works closely with the School of Architecture's Remaking Cities Institute and Heinz College colleagues and students on urban design, economic development, and sustainability issues. She actively collaborates with the University of Pittsburgh Graduate School of Public Health, Children's Hospital of Pittsburgh, University of Pittsburgh Medical Center, and the RAND Corporation.

Ms. Kurland received the Heinz School's Martcia Wade award for teaching excellence in 2005. She also received the 1998, 2000, and 2003 Excellence in Education award from ARCHIBUS, Inc. for her CAFM teaching programs in the community and at Carnegie Mellon.

Kristen Kurland is also the co-author of a series of best selling GIS books for ESRI Press and Thompson Publishing, including GIS Tutorial Workbook, GIS Tutorial for Health, Learning and Using GIS: ArcExplorer Edition, and Learning and Using GIS: ArcGIS Edition.



Ed Parsons

Google UK

Ed Parsons is the Geospatial Technologist of Google, with responsibility for evangelising Google's mission to organise the world's information using geography, and tools including Google Earth, Google Maps and Google Maps for Mobile.

Ed was the first Chief Technology Officer in the 200-year-old history of Ordnance Survey, and was instrumental in moving the focus of the organisation from mapping to Geographical Information.

Ed came to the Ordnance Survey from Autodesk, where he was EMEA Applications Manager for the Geographical Information Systems (GIS) Division. During his tenure, he helped Autodesk to become one of the key providers of GIS software. Earlier in his career he was a Senior Lecturer at Kingston University, where he helped establish Europe's first undergraduate course in GIS.

He earned a Masters degree in Applied Remote Sensing from Cranfield Institute of Technology and is a fellow of the Royal Geographical Society, London. He is the author of numerous articles, professional papers and presentations to International Conferences, and has developed one of most popular Weblogs in the Geospatial Industry, www.edparsons.com.



Kevin D. Pomfret

Open Geospatial Consortium

Kevin is a business lawyer with a focus on Spatial Law – the legal and policy issues associated with spatial data and spatial technology including, intellectual property rights, licensing, liability, privacy and national security. He regularly counsels businesses

on licensing and distribution agreements, mergers and acquisitions and regulatory issues and consults with government officials on developing legal and policy frameworks to support spatial data infrastructures. Kevin is a member of the Board of Directors of the Open Geospatial Consortium. He writes and speaks extensively on spatial law and technology and teaches a class on Spatial Law in masters-level program for GIS professionals. He has been recognized as a Virginia "Super Lawyer" and a member of Virginia's "Legal Elite."

Prior to attending law school, Kevin served as a satellite imagery analyst with the U.S. government. In that capacity he developed an imagery collection strategy to monitor critical arms control agreements. He also served as the special assistant to the U.S. government official responsible for developing the Intelligence Community's satellite imagery collection and exploitation requirements.

Spatial Diversity

Invited Speakers

Andrew Campbell – Triple Helix Consulting, Australia.

Dr Steve Carver – School of Geography, University of Leeds, UK.

Professor Mark Daniel – School of Health Sciences, University of South Australia.

Dr Graham Harris – Lancaster Environment Centre, Lancaster University, England.

Professor Henry Nix – Australian National University, Australia.

Dr Russell Priebbenow – Department of Natural Resources and Water, QLD, Australia.

Richard Thackway – Bureau of Rural Sciences, Canberra, Australia.

View Abstracts By Author

Abel, Nick	Building or Reducing Resilience in our Social-Ecological Systems
Adams, Matt	WA Experience with Land condition monitoring
Ahmad, Salahuddin	A GIS-based Approach to the Characterization of Spatial Accessibility to Healthcare Services by Local Communities in Urban Fringe Zones in Australia
Ahmad, Salahuddin	A Simple GIS-based Method for Transferring Census Data from CCDs to MBs
Ailleres, Laurent	A 3-Dimensional Visualization -Decision Support Tool For Groundwater-Surface Water Connectivity Assessment
AL Kahtani, Saad	Evaluating Methodologies of Measuring Accessibility to Tourist Attractions at the Micro and Macro Levels
Alakus, Recep	Managing Assets - Spatially and Graphically
Ali, Syed	A New Model of Object-Based Fusion Using Lidar and Multispectral Imagery For Forest Structure Assessment at the Tree Level
Andrew, Dempster	Evaluation of WiFi Technologies for Indoor Positioning Applications
Apan, Armando	Quantifying Biomass Changes in Mitchell Grassland Using MODIS Imagery and Precipitation Events
Apan, Armando	Rice Crop Mapping Using Radar Imagery: Comparison of Classification Accuracy of Different Envisat ASAR Modes and Classifiers
Apan, Armando	Simulating Spatial Variability of Cereal Yields From Historical Yield Maps and Satellite Imagery
Apan, Armando	Crop Maturity Mapping Using a Low-Cost Low-Altitude Remote Sensing System
Arbon, Kelly	Spatial Distribution of Infections of Wombats with Sarcoptic Mange
Arrowsmith, Colin	A Spatial Risk-Based Approach For Coastal Risk Management
Arrowsmith, Colin	Assessing the Utility of DMSP/OLS Night-Time Images to Characterize Indian Urbanization
Arrowsmith, Colin	Cross-cultural Spatial Behaviour in Tourism
Arrowsmith, Colin	Spatio-temporal Analysis of Micro-historical Cinematic Data
Arrowsmith, Colin	Typifying Spatial Behaviour For Visitors to National Parks: A Case Study in Port Campbell National Park
Arroyo, Lara	Object-oriented Mapping of Biophysical Riparian Zone Properties from High Spatial Resolution Imagery: Potential for Automation
Arundel, Jonathan	Potential Control Strategies For Epidemics Spreading Via Migratory Populations
Atkinson, Glenn	Predicting, Monitoring and Evaluating Soil Erosion Over NSW Using RUSLE and Time-Series Satellite Images
Aurambout, Jean-Philippe	An E-science Approach to Climate Change Adaptation
Baby, Sultana	Generation and Deployment of Detailed Geography in Management of Sites of Significance : A Case Study From the Inventory of the Heritage Assets of Phillip Island, Victoria, Australia
Bae, Kwang-Ho	An Automated Registration Method For 3D Laser Scanner Point Clouds and the Evaluation Of Its Convergence Region
Bae, Kwang-Ho	Tracking Roadside Kerbs in TLS Point Clouds using Principal Component Analysis
Bagheri, Pooya	Sustainable City - Making a City more Efficient by City Information Station
Baker, Alice	Assessment of Soil Properties From Soil Spectral Analysis
Baker, David	Spatial Expressions of Aboriginal Heritage Information: Arguments For An 'Aboriginal Methodology'
Bakker, Lidewij	Time-Series Land Cover Change in the Heytesbury Catchments, Western Australia
Bamber, Alec	Designing and Implementing the Australian Statistical Geography Standard (ASGS)
Bandalan, Elmer	Using Spatial Data Hiding for Location Privacy Protection: A Study of Abfuscation LBS
Barlow, Snow	Climate Change, Sustainable Agriculture And Environmental Management: A Regional Perspective
Bartolo, Renee	Spatial Information and Analysis for Climate Change Assessment in the Alligator Rivers Region, Northern Territory
Behn, Graeme	Exploiting Time Sequences of Satellite Imagery to Monitor Landscape Aspects
Bellette, Kathryn	Using Research Outcomes to Influence Natural Resource Management and Policy Decision Making - Are We in the Right Games?
Bellman, Chris	Applying Belief-Desire-Intention reasoning models to communicate spatial uncertainty in image classification



HOME
Papers by Author
Papers by Category
Keynote presentations
Conference Steering Committee
Proceedings Book
Conference program

Proceedings of the Surveying & Spatial Sciences Institute Biennial International Conference Adelaide 2009

Publisher: Surveying & Spatial Sciences Institute, 2009

ISBN: 978-0-9581366-8-6

Editors:

Bertram Ostendorf¹, Penny Baldock²,
David Bruce³, Mike Burdett⁴, Paul Corcoran³

¹ Spatial Information Group, School of Earth and Environmental Sciences, University of Adelaide

² Business Information, Department for Families and Communities, South Australia

³ Barbara Hardy Centre for Sustainable Urban Environments, School of Natural & Built Environments, University of South Australia, Adelaide

⁴ Alexander Symonds Surveying, Kent Town, South Australia



Citing Papers in Proceedings

Papers from these proceedings should be cited using this format:

Smith, A.B. and Miller, C.D. (2009). Spatial Diversity. In Ostendorf B., Baldock, P., Bruce, D., Burdett, M. and Corcoran, P. (eds) Proceedings of the Surveying & Spatial Sciences Institute Biennial International Conference Adelaide 2009, Surveying & Spatial Sciences Institute, pp. 101-108. ISBN: 978-0-9581366-8-6.

The proceedings volume contains articles that were refereed by two independent peer reviewers as well as nonrefereed papers. The review status is indicated on the title page of individual articles.

Responsibility for the contents of these papers rests upon the authors and not on the Surveying and Spatial Sciences Institute.

Acknowledgements

The production of this proceedings CD was kindly supported by the Spatial Information Committee of South Australia (SICOM)



Proceedings of the Surveying & Spatial
Sciences Institute Biennial International
Conference Adelaide 2009

David Bruce Mike Burdett Paul Corcoran



Proceedings of the Surveying & Spatial Sciences Institute Biennial International Conference Adelaide 2009

28 September – 2 October 2009 - Adelaide Convention Centre, Adelaide, Australia

Edited by

Bertram Ostendorf

Spatial Information Group, School of Earth and
Environmental Sciences, University of Adelaide

Penny Baldock

Information and Knowledge Management,
Department for Families and Communities, South
Australia

David Bruce

Barbara Hardy Centre for Sustainable Urban
Environments, School of Natural & Built
Environments, University of South Australia,
Adelaide

Mike Burdett

Alexander Symonds Surveying, Kent Town, South
Australia

Paul Corcoran

Barbara Hardy Centre for Sustainable Urban
Environments, School of Natural & Built
Environments, University of South Australia,
Adelaide



Published by the Spatial Sciences Institute, 2009

ISBN: 978-0-9581366-8-6.

Citing Papers in Proceedings

Papers from these proceedings should be cited using this format:

Smith, A.B. and Miller, C.D. (2009). Spatial Diversity. In Ostendorf B., Baldock, P., Bruce, D., Burdett, M. and Corcoran. P. (eds) Proceedings of the Surveying & Spatial Sciences Institute Biennial International Conference Adelaide 2009, Surveying & Spatial Sciences Institute, pp. 101-108. ISBN: 978-0-9581366-8-6.

The proceedings volume contains articles that were refereed by two independent peer reviewers as well as non-refereed papers. The review status is indicated on the title page of individual articles if papers were deemed acceptable.

Responsibility for the contents of these papers rests upon the authors and not on the Surveying and Spatial Sciences Institute.

Acknowledgements

The production of the proceedings CD was kindly supported by the Spatial Information Committee of South Australia (SICOM)



TABLE OF CONTENTS

SOCIETY AND EDUCATION **1**

USING SPATIAL DATA HIDING FOR LOCATION PRIVACY PROTECTION: A STUDY OF OBFUSCATION LBS

ELMER BANDALAN AND MATT DUCKHAM 3

THE EMERGING PROBLEMS OF JAMSOSTEK IMPLEMENTATION

UNING MARLINA 13

RECRUITMENT AND RETENTION OF STUDENTS IN THE GEOSPATIAL SCIENCES

GITA PUPEDIS AND CHRIS BELLMAN 27

RECREATIONAL OPPORTUNITY FOR PARK USE MODELLED ON A LANDSCAPE SCALE

RAMESH RAJA SEGARAN, ANNE LAMBERT, DARLA HATTON MACDONALD, MEGAN M. LEWIS AND BERTRAM OSTENDORF 39

SPATIALLY ENABLING GOVERNMENT **51**

SPATIALLY ENABLING GOVERNMENT: A SNAPSHOT FROM AUSTRALIA

ROHAN MARK BENNETT, ABBAS RAJABIFARD

UNDERSTANDING SPATIAL ENABLEMENT OF GOVERNANCE

PETER HOLLING

USING SPATIAL TECHNOLOGY TO HELP SOLVE SOCIAL PROBLEMS

MARNIE LEYBOURNE

IMPLEMENTING AN OPEN ACCESS POLICY WITHIN A DATA-DRIVEN ENVIRONMENT

KARL MAJORHAZI AND ALISON STRINGER

LAND ADMINISTRATION

MANAGING ASSETS – SPATIALLY AND GRAPHICALLY

RECEP ALAKUS

A TALE OF FOUR PARCELS: A STUDY OF NEW PROPERTY INTERESTS AND THEIR ON-GROUND IMPACT

ROHAN MARK BENNETT 105

ORGANISATIONAL PARTICIPATION GEOGRAPHICAL INFORMATION SYSTEMS (OPGIS)

PAUL CORCORAN 117

Hi Shane

Are you able to complete eprints and attach cover sheet and paper and return this to me. Ta Juanita

Done, Shane 20/11/09

GENERATIONS OF DATA QUALITY – WHAT’S NEXT?	125
MICHAEL DIXON	
STATUS OF THE NT GEOSPATIAL REFERENCE SYSTEM	133
KATHRYN GRAHAM, EMMA MANN, AMY PETERSON, ROB SARIB	
TOWARDS E-LAND ADMINISTRATION - ELECTRONIC PLANS OF SUBDIVISIONS IN VICTORIA	155
MOHSEN KALANTARI , CHRIS LESTER , DAVID R BOYLE , NEIL COUPAR	
A BENCHMARK FOR THE AUSTRALIAN HYDROLOGICAL GEOSPATIAL FABRIC	163
ELIZBETH R.McDONALD	
AN OVERVIEW OF ADVERSE POSSESSION IN AUSTRALIA WITHIN THE FRAMEWORK OF THE TORRENS SYSTEM OF LAND REGISTRATION AND COMMENT ON A RELATED COURT CASE.	175
MR SHANE SIMMONS	
GAZETTEERS - A FUNDAMENTAL DATA SET	189
WILLIAM WATT	
ABORIGINAL PLACE NAMES, CARTOGRAPHIC METHODOLOGY AND SPATIAL APPLICATIONS	197
WILLIAM WATT	
DIGITAL ELEVATION MODEL GENERATION FROM INTERFEROMETRIC SYNTHETIC APERTURE RADAR USING MULTI-SCALE METHOD	205
JUNG HUM YU, LINLIN GE, CHRIS RIZOS	

URBAN AND REGIONAL PLANNING **217**

TRACKING ROADSIDE KERBS IN TERRESTRIAL LASER SCANNER POINT CLOUDS USING PRINCIPAL COMPONENT ANALYSIS	219
DAVID BELTON AND KWANG-HO BAE	
SPATIAL PATTERNS OF URBAN COMPACTNESS IN MELBOURNE: AN URBAN MYTH OR A REALITY	231
SHOBHIT CHANDRA, PREM CHHETRI, AND JONATHAN CORCORAN	
MONITORING REGIONAL PLANNING PERFORMANCE IN SOUTH EAST QUEENSLAND	243
RUSS JOSIPOVIC, PETER KAPETANIC	
EVALUATING METHODOLOGIES THAT MEASURE ACCESSIBILITY TO TOURIST ATTRACTIONS	251
SAAD JUBRAN H. AL KAHTANI, JIANHONG (CECILIA) XIA, BERT VEENENDAAL	
USE OF SPATIAL DATA IN HOUSING AND URBAN STUDIES	265
SADASIVAM KARUPPANNAN	
MODELLING OF SPATIO-TEMPORAL EXPANSION OF BUILT-UP AND RESIDENTIAL-COMMERCIAL DWELLINGS AND THEIR SOCIOECONOMIC IMPLICATIONS IN THE LOWER HUNTER OF NSW, AUSTRALIA	277
RAMITA MANANDHAR, INAKWU ODEH, TIHOMIR ANCEV	

INTEGRATION OF GIS AND REMOTE SENSING IN MAPPING URBAN CONSOLIDATION PATTERNS- A CASE STUDY IN CITY OF MONASH, AUSTRALIA	
THU PHAN, JIM PETERSON, SHOBHIT CHANDRA	293
REALIZATION OF SUSTAINABLE URBAN ENVIRONMENT THROUGH SPATIAL DATA INFRASTRUCTURES	
F.M.QURESHI AND A.RAJABIFARD	305
MAPPING URBAN AREAS OF INDIA FROM DMSP/OLS NIGHT-TIME IMAGES	
KOEL ROYCHOWDHURY, SIMON JONES AND COLIN ARROWSMITH	319
PHOTOGRAMMETRIC APPLICATIONS IN ROUTINE NOISE BARRIER INSPECTIONS	
GABRIEL SCARMANA	333
AN INTEGRATED APPROACH FOR DISASTER RISK REDUCTION USING SPATIAL PLANNING AND SDI PLATFORM	
HERI SUTANTA, ABBAS RAJABIFARD AND IAN D. BISHOP	341
TRANSPORT	353
AN AUTOMATED REGISTRATION METHOD FOR 3D POINT CLOUDS AND THE EVALUATION OF ITS CONVERGENCE REGION	
KWANG-HO BAE	355
EVALUATION OF GNSS POSITIONING RELIABILITY IN THE AIRBORNE MODE	
AHMED M EL-MOWAFY	365
ENHANCING DIGITAL ROAD MAP WITH LANE DETAILS EXTRACTED FROM LARGE-SCALE STEREO AERIAL IMAGERY USING OBJECT-ORIENTED IMAGE ANALYSIS	
HANG JIN, ZHENGRONG LI, AND YANMING FENG	379
CAMPUS BICYCLE-PARKING FACILITY SITE SELECTION: EXEMPLIFYING PROVISION OF AN INTERACTIVE FACILITY MAP	
COURTNEY LEIGH, JIM PETERSON, SHOBHIT CHANDRA	389
EMERGENCY SERVICES	399
THE DEVELOPMENT AND DEPLOYMENT OF A DIGITAL ASSESSMENT FORM FOR POST VICTORIAN BUSHFIRE BUILDING ASSESSMENT	
ROHAN A. COGHLAN, FELIX LIPKIN, STEPHEN EGAN, LISA M. CORNISH	401
EVALUATION OF WIFI TECHNOLOGIES FOR INDOOR POSITIONING APPLICATIONS	
ALLISON KEALY, BINGHAO LI, THOMAS GALLAGHER, ANDREW DEMPSTER	411
AN INTEGRATED NAVIGATION SYSTEM TO SUPPORT MAN-PORTABLE MAPPING/IMAGING IN DIFFICULT URBAN ENVIRONMENTS	
YONG LI AND CHRIS RIZOS	423

REAL-TIME DATA VISUALIZATION IN COLLABORATIVE VIRTUAL ENVIRONMENTS FOR EMERGENCY RESPONSE	
PAN WANG, I.D. BISHOP, C. STOCK	435
THE CANBERRA SPATIAL COMMUNITY RESPONSE TO THE VICTORIAN BUSH FIRES	
M. WILSON, F. BLANCHFIELD	443
COMMUNICATION	455
OBJECT LIBRARIES: THE NEXT STEP IN SPATIAL DATA INFRASTRUCTURE	
IAN BISHOP, PANG CHAN, TAI CHAN, ALEX LAU, CHRIS PETTIT, CHRISTIAN STOCK, DANYAL SYED	457
SMALL VOICES MAGNIFIED: USING WEB 2.0 FOR MAPPING ALTERNATIVE AUSTRALIAN VIEWPOINTS	
WILLIAM CARTWRIGHT	469
A WEB-BASED REAL-TIME DELIVERY OF GLOBAL NAVIGATION SATELLITE SYSTEM DATA	
YONG HEO, SAMSUNG LIM AND CHRIS RIZOS	481
PERFORMANCE ANALYSIS OF REAL-TIME GNSS DATA DISTRIBUTION OVER THE INTERNET	
THOMAS YAN, SAMSUNG LIM, CHRIS RIZOS	491
TECHNOLOGY	511
A SIMPLE GIS-BASED METHOD FOR TRANSFERRING CENSUS DATA FROM CCDS TO MBS	
SALAHUDDIN AHMAD, GANG-JUN LIU, BENNO ENGELS	513
MONITORING LONGWALL MINE SUBSIDENCE AND FAR-FIELD DISPLACEMENTS USING MULTI-WAVELENGTH RADAR INTERFEROMETRY	
HSING-CHUNG CHANG, ALEX HAY-MAN NG, KUI ZHANG, YUSEN DONG, ZHE HU, LINLIN GE AND CHRIS RIZOS	523
IMPLICATIONS OF A "SYSTEM OF SYSTEMS" RECEIVER	
ANDREW G. DEMPSTER, CHRIS RIZOS	535
AUTO-DERIVATION OF IN-SHORE AND CHANNEL WATER DEPTH VIA AERIAL IMAGES: A LOW-COST APPROACH USING ARTIFICIAL NEURAL NETWORKS	
THI NGUYEN, PETER WHEELER, JIM PETERSON, LEE GORDON-BROWN	547
WHERE IS POSITIONAL UNCERTAINTY?	
CRAIG ROBERTS, SELIN OZDEMIR, SIMON MCELROY	559
LIMITS OF MULTI-FRAME IMAGE ENHANCEMENT: A CASE OF SUPER-RESOLUTION	
GABRIEL SCARMANA	577
A COMPARISON OF CANOPY COVER DERIVED FROM OBJECT-BASED CROWN EXTRACTION TO PIXEL-BASED COVER ESTIMATES.	
TIM WHITESIDE AND GUY BOGGS	589

DATA AND BUSINESS MANAGEMENT **603**

IMPLEMENTING THE AUSTRALIAN STATISTICAL GEOGRAPHY STANDARD (ASGS) ALEC BAMBER AND ROB WALTER	605
DEVELOPING REGIONAL PRECISE POSITIONING SERVICES USING THE CURRENT AND FUTURE GNSS RECEIVERS YANMING FENG, CHRIS RIZOS, MATT HIGGINS, SAMSUNG LIM AND MAOLIN TANG	617
SPATIAL METADATA AUTOMATION : A NEW APPROACH MOHSEN KALANTARI, ABBAS RAJABIFARD, HAMED OLFAT	629
MAPPING THE TERRAIN: A MOSAIC APPROACH TO SMALL AREA ANALYSIS OF NEED IN QUEENSLAND AUTHOR: KATE LILEY	637
VOLUNTEERED GEOGRAPHIC INFORMATION FOR BUILDING SDI KEVIN. McDOUGALL	645
PUBLISHING LARGE NATIONAL DATASETS USING AN ONLINE VIRTUAL GLOBE MR TONY PACK ¹ AND MR MICHAEL DE HOOG	655
GEOSPATIAL STANDARDS WORKING FOR OUR SPATIAL INDUSTRY RUSSELL PRIEBBENOW	665

COORDINATE SYSTEMS AND DATUMS **679**

SINGLE FREQUENCY PRECISE POINT POSITIONING USING A LOW-COST GPS RECEIVER SUELYNN CHOY, DAVID SILCOCK, KEFEI ZHANG	681
UNDERSTANDING COORDINATE SYSTEMS, DATUMS AND TRANSFORMATIONS IN AUSTRALIA VOLKER JANSSEN	697
GENERALIZATION EXPERT SYSTEM (GES): A KNOWLEDGE-BASED APPROACH FOR GENERALIZATION OF LINE AND POLYLINE SPATIAL DATASETS SHARON KAZEMI, SAMSUNG LIM AND HYE-YOUNG PAIK	717

DATA INTEGRATION AND NATURAL RESOURCES MANAGEMENT **731**

USING LIDAR TO ASSESS THE EFFECT OF FIRE AND FLOODS ON UPLAND PEAT BOGS, WATERFALL GULLY, MOUNT LOFTY RANGES, SOUTH AUSTRALIA SOLOMON BUCKMAN, KATHERINE C. BROWNLIE, ROWENA H. MORRIS, ROBERT P. BOURMAN, JAVIER LEON	733
--	-----

THE IMPACT OF REMOTE SENSING PLATFORM AND SPATIAL RESOLUTION ON THE DETECTION OF WOODY VEGETATION: IMPLICATIONS FOR ENVIRONMENTAL AND CONSERVATION APPLICATIONS.	
E FARMER, KJ REINKE, SD JONES, A LECHNER, G DICKINS, T NORTON	745
AN ASSESSMENT OF SATELLITE IMAGE DATA REQUIREMENTS FOR LARGE AREA LAND COVER MONITORING IN QUEENSLAND	
TONY GILL, PETER SCARTH, TIM DANAHER, SAM GILLINGHAM, STUART PHINN	755
EVALUATION OF THE PERFORMANCE OF DEM INTERPOLATION ALGORITHMS FOR LIDAR DATA	
XIAOYE LIU, ZHENYU ZHANG, JIM PETERSON	771
GUIDELINES ON BOTH SPATIAL STANDARDS FROM, AND THE MERGING OF, DIGITAL TERRAIN DATA FOR EMERGENCY RISK MANAGEMENT PLANNING.	
ANTHEA L. MITCHELL, HSING-CHUNG CHANG, JUNG HUM YU, LINLIN GE AND TONY SLEIGH ³ .	781
EXPLOITING TIME SEQUENCES OF SATELLITE IMAGERY TO MONITOR LANDSCAPE ASPECTS	
KATHERINE ZDUNIC AND GRAEME BEHN	791
<u>ENVIRONMENTAL MONITORING AND MODELLING</u>	805
FARM DAMS IN THE CURDIES RIVER CATCHMENT, WESTERN VICTORIA: ITS POTENTIAL IMPACT ON WATER QUALITY	
LIDWEIJ BAKKER, JIM PETERSON AND SHOBHIT CHANDRA	807
DETECTING CHANGE IN A VARIABLE LANDSCAPE. MONITORING INNAMINCKA REGIONAL RESERVE WITH AVHRR-NDVI AND LANDSAT TM.	
LAWLEY, E.F., LEWIS, M.M., OSTENDORF, B.	817
USING REMOTE SENSING TO ESTIMATE SNOW DEPTH AND SNOW WATER EQUIVALENCE	
CHEE Y. LEE, SIMON D. JONES AND CHRIS J. BELLMAN	829
GPS SURVEYS WITHIN FALLS CREEK FOR SNOW DEPTH DERIVATION AND AERIAL PHOTO CONTROL	
CHEE Y. LEE, DAVID M. SILCOCK AND LUCAS HOLDEN	845
INTEGRATED SPATIAL DATA MODEL FOR MANAGING BORE STRATIGRAPHIC AND HYDROLOGICAL INFORMATION	
ZAFFAR SADIQ MOHAMED-GHOUSE, DEREK GOODIN AND HENRY CHAPLIN	857
SANDY BARRIER CHANGES AT THE NINETY MILE BEACH, LAKES ENTRANCE, VICTORIA, AUSTRALIA	
NGUYEN, T., WHEELER, P.J., PETERSON, J.A., GORDON-BROWN, L.N.	863
MULTI-SCALE DISTRIBUTION PATTERNS OF THE SOUTHERN HAIRY-NOSED WOMBAT	
BERTRAM OSTENDORF, DAVID TAGGART, LIBERTY OLDS	877
ANALYSING BIOMASS FLUCTUATIONS IN MITCHELL GRASSLAND, AUSTRALIA, IN WET AND DRY RAINY MONTHS USING MODIS DATA	
KITHSIRI PERERA ¹ AND ARMANDO APAN	887

TOWARDS AN APPROACH FOR REMOTE SENSING-BASED RANGELAND CONDITION ASSESSMENT IN NORTH WESTERN AUSTRALIA	
TODD P. ROBINSON ^{1*} , PAUL NOVELLY, IAN WATSON, ROBERT CORNER, PHILIP THOMAS, TOM SCHUT, SONYA JANSEN, DAMIAN SHEPHERD	899
QUANTIFICATION OF PATERSON'S CURSE INFESTATION WITH REMOTE SENSING	
A.G.T. SCHUT AND D. MCINTYRE	915
MAPPING SOIL VARIABILITY WITH HYPERSPECTRAL IMAGE DATA	
DAVID SUMMERS, MEGAN LEWIS, BERTRAM OSTENDORF AND DAVID CHITTLEBOROUGH	925
<u>NATURAL RESOURCES MANAGEMENT</u>	941
A NEW OBJECT-BASED FUSION MODEL USING LIDAR AND MULTISPECTRAL IMAGERY FOR FOREST STRUCTURE ASSESSMENT AT THE TREE LEVEL	
SYED ALI, PAUL DARE, SIMON JONES	943
NATIONAL DATA GRID, A PLATFORM FOR INTEGRATED CLIMATE CHANGE RESEARCH	
CHAN, T.O., FARRELL, S. AND FRANKISH, G.	953
BEYOND THE BARBED WIRE FENCE IS A FOREIGN COUNTRY: THINKING AND MANAGING ACROSS TENURES	
STEVE DOVERS AND CARINA WYBORN*	965
A SPATIAL ANALYSIS OF GREATER BILBY (<i>MACROTIS LAGOTIS</i>) HABITAT IN SOUTH-WEST QUEENSLAND	
ERNEST. DUNWOODY, XIAOYE. LIU, AND KEVIN. McDOUGALL	977
TOWARDS CREATING AN ADAPTIVE CAPACITY INDEX FOR CLIMATE CHANGE ADAPTION USING THE NATIONAL SPATIAL DATA GRID	
FITZSIMONS, P.J., CHAN, T.O., PETTIT, C., , LIU, E. 'TILLER, L.	987
SEEKING SUSTAINABILITY WITHIN COMPLEX REGIONAL NRM SYSTEMS	
GRAHAM HARRIS	1001
RISK-BASED APPROACH TO MANAGEMENT OF COASTAL AREAS FROM GLOBAL CLIMATE CHANGE	
SILVESTER (SUNGCHAN) KIM, COLIN ARROWSMITH, JOHN HANDMER	1015
PRESENTING OBJECTIVE AND SUBJECTIVE UNCERTAINTY INFORMATION FOR SPATIAL SYSTEM-BASED MODELS	
KIM LOWELL' BRENDAN CHRISTY, GREG DAY	1029
RELATIONSHIP BETWEEN SOIL PROPERTIES AND AIRBORNE GAMMA-RADIOMETRIC DATA	
SERHIY MARCHUK AND BERTRAM OSTENDORF	1041
MEASUREMENT, MONITORING AND REPORTING SYSTEMS FOR IMPROVED WATER MANAGEMENT AT FARM-REGIONAL SCALES IN AUSTRALIA	
A. McALLISTER, D. WHITFIELD, M. ABUZAR, AND E. MORSE-MCNABB	1053

APPLYING LANDSCAPE SCIENCE TO NATURAL RESOURCE MANAGEMENT	
WAYNE S MEYER, BRETT BRYAN, ANDREW FISHER, NEVILLE CROSSMAN AND MEGAN LEWIS	1063
THE VICTORIAN LAND USE INFORMATION SYSTEM	
ELIZABETH MORSE-McNABB	1073
A 3-DIMENSIONAL VISUALIZATION – DECISION SUPPORT TOOL FOR GROUNDWATER-SURFACE WATER CONNECTIVITY ASSESSMENT	
SULTANA NASRIN NURY, XUAN ZHU, IAN CARTWRIGHT, LAURENT AILLERES	1083
UNDERSTANDING AND MANAGING THE LANDSCAPE AS A COMPLEX SYSTEM: WHAT CAN BOTTOM-UP MODELLING APPROACHES CONTRIBUTE?	
LAEL PARROTT	1095
AN INVESTMENT DECISION SUPPORT SYSTEM FRAMEWORK FOR AQUATIC (WATERWAYS, ESTUARIES AND WETLANDS) AND BIODIVERSITY MANAGEMENT IN SOUTH WEST WESTERN AUSTRALIA	
MILOS PELIKAN	1113
AN E-SCIENCE APPROACH TO CLIMATE CHANGE ADAPTATION	
CHRIS PETTIT, IAN BISHOP, ANN BORDA, PETTERI UOTILA, VICTOR SPOSITO, LINDEN RAYBOULD, A.B.M. RUSSEL	1123
AGRI-ENVIRONMENTAL DECISION-MAKING IN THE EUROPEAN UNION AND CANADA: LESSONS FOR AUSTRALIA?	
GUY M ROBINSON	1135
THE LOCATION INTELLIGENCE APPROACH TO SUSTAINABLE WATER MANAGEMENT	
CRAIG SANDY	1149
SPATIAL HETEROGENEITY OF SOIL PROPERTIES TO PREDICT PESTICIDE MOVEMENT	
BENG P. UMALI, RAI S. KOOKANA, DANNI P. OLIVER, DAVID J. CHITTLEBOROUGH, JOHN L. HUTSON, AND BERTRAM OSTENDORF	1155
VICTORIAN SOIL INFORMATION SYSTEM (VSIS)	
S. WILLIAMS, D. HUNTER, N. ROBINSON	1167
<u>SPATIAL INFORMATION FOR AGRICULTURE</u>	1179
INPUT PARAMETERS SELECTION FOR SOIL MOISTURE RETRIEVAL USING AN ARTIFICIAL NEURAL NETWORK	
SOO-SEE CHAI, BERT VEENENDAAL, GEOFF WEST, JEFFREY P. WALKER	1181
COLLABORATIVE ENVIRONMENT VISUALIZATION PLATFORM - AN EFFECTIVE TECHNOLOGY FOR KNOWLEDGE TRANSFER BETWEEN SCIENTISTS AND LOCAL FARMERS	
HAOHUI CHEN, IAN D BISHOP, CHRISTIAN STOCK, DAVID LAMB, MARK TROTTER	1195
SIMULATING SPATIAL VARIABILITY OF CEREAL YIELDS FROM HISTORICAL YIELD MAPS AND SATELLITE IMAGERY	
YP DANG, A APAN, RC DALAL, S DARR, M SCHMIDT, M PRINGLE	1205

SPATIAL VARIABILITY OF SUBSOIL CONSTRAINTS IN NORTH-EASTERN AUSTRALIA	
YP DANG, RC DALAL, S DARR, AJW BIGGS, J MOSS, D ORANGE	1217
CROP MATURITY MAPPING USING A LOW-COST LOW-ALTITUDE REMOTE SENSING SYSTEM	
DR TROY JENSEN, ASSOC PROF ARMANDO APAN, MR LES ZELLER	1231
RICE CROP MAPPING USING RADAR IMAGERY: COMPARISON OF CLASSIFICATION ACCURACY OF DIFFERENT ENVISAT ASAR MODES AND CLASSIFIERS	
NGUYEN LAM-DAO, ARMANDO APAN, THUY LE-TOAN, ALEXANDRE BOUVET, FRANK YOUNG, TRUNG LE-VAN	1245
"I CAN'T BE GREEN IF I'M IN THE RED!" THE CREATION OF HIGH RESOLUTION BROAD SCALE ECONOMIC ESTIMATES TO ASSIST IN THE DECISION TO ADOPT ALTERNATIVE LAND USES IN THE SA CROPPING REGION	
GREG LYLE, ADAM KILPATRICK AND BERTRAM OSTENDORF	1259
A FRAMEWORK TO QUANTIFY NUTRIENT CONTENT AND NUTRITIVE CHARACTERISTIC OF PASTURE ECOSYSTEMS USING REMOTE SENSING	
A.G.T. SCHUT, R.G.H. STOVOLD AND S.G. GHERARDI	1271
INTEGRITY DETERMINATION OF RTK SOLUTIONS IN PRECISION FARMING APPLICATIONS	
JUN WANG AND YANMING FENG	1277
<u>SPECIAL SESSION</u>	1291
"RETRACING THE CANNING STOCK ROUTE" A DOCUMENTARY-FILM BY PETER MCCONKEY	
	1292